

CLEAN COPY OF CLAIMS

- 1 16. A man-rated device to which a person is removably secured, the device for use with an
2 associated structure which the person intends to access, the device comprising:
3 multiple, modular components dimensioned to be man-rated when
4 assembled, the components including a base and at least one, elongated,
5 substantially cylindrical member, the base having an element adapted to be mounted in
6 operative proximity to the associated structure, the member formed substantially from at
7 least one material selected from the group consisting of aluminum, carbon fiber
8 composites, KEVLAR fibers, fiberglass, and aluminum-ceramic composites;
9 the member having one end removably secured to the base
10 without being welded thereto, the other end of the member having means for removably
11 securing a person thereto, whereby the components can be readily assembled and
12 disassembled;
13 the combined weight of the components being less than the corresponding
14 weight if the components were formed of steel.
- 1 17. The device of claim 16, wherein the device comprises a transformer-type device with the
2 member extending substantially vertically from the base, the member being formed substantially
3 of a carbon-fiber composite.
- 1 18. The device of claim 16, wherein the ends of the member include a reinforced portion to
2 increase the strength of the member under compressive loads.
- 1 19. The device of claim 18, wherein the reinforced portion comprises an insert at the end of
2 the member secured to the base.
- 1 20. The device of claim 17, wherein the member comprises a tube, and further comprising an
2 extension mast telescopically received in the tube, and a hoisting means removably secured to the
3 extension mast.
- 1 21. The device of claim 16, wherein the base is substantially cast and substantially free of
2 welded components.
- 1 22. A man-rated device to which a person is removably secured, the device for use with an
2 associated structure which the person intends to access, the device comprising:

multiple, modular components dimensioned to be man-rated when assembled, the components including a base having an element adapted to be mounted in operative proximity to the associated structures;

wherein the modular components further include multiple elongated members and at least one joint section, the joint section including an elbow having two legs extending outwardly at an angle from a central axis, the elongated members including a post and an extension arm, the extension arm having a proximal end and a free end;

wherein one leg of the elbow is removably secured to one of the ends of the post without being welded thereto, and the other leg of the elbow is removably secured to the proximal end of the extension arm without being welded thereto, the free end of the extension arm being spaced a lateral distance from the post to define an offset;

the post having one end removably secured to the base without being welded thereto, whereby the components can be readily assembled and disassembled;

wherein the post and the extension arm are formed of at least one material selected from the group consisting of aluminum, carbon fiber composites, KEVLAR fibers, fiberglass, and aluminum-ceramic composites.

23. The device of claim 22, wherein the multiple elongated members comprise additional elongated members which are interchangeable with either the post, the extension arm, or both, the additional elongated members having lengths differing from the length of either the post or the extension arm.

24. The device of claim 23, wherein the additional elongated members comprise interchangeable extension arms having fixed lengths, the fixed lengths selected to range between 18" and 48".

25. The device of claim 22, wherein the elbow is asymmetric, making one of the legs into a shorter leg, and the other of the legs into a longer leg, each of the legs terminating in respective leg ends, each of the leg ends being able to removably fit in either the proximal end of the extension arm or the end of the post, whereby the elbow is reversible, the free end of the extension arm defining a first offset when the extension arm is secured to the shorter leg and

6 defining a second offset, longer than the first offset, when the extension arm is secured to the
7 longer leg.

1 26. A man-rated, confined space device, comprising:

2 multiple, modular components dimensioned to be man-rated when
3 assembled, the components including:

4 a base with a structure adapted to be mounted in operative
5 proximity to the confined space;

6 at least two tubes, one of the tubes comprising a post, and the other
7 of the tubes comprising an extension arm;

8 an elbow between the post and the extension arm, and

9 means for hoisting loads into and out of the confined space;

10 the components being removably interconnected without welding between the
11 components, whereby the components can be readily assembled and disassembled.

1 27. The device of claim 26, wherein the tubes are formed of at least one material selected
2 from the group consisting of aluminum, carbon fiber composites, KEVLAR fibers, fiberglass,
3 and aluminum-ceramic composites.

1 28. The device of claim 26, wherein the tubes further include additional tubes which are
2 interchangeable with either the post, the extension arm, or both, the additional tubes having
3 lengths differing from the lengths of either the posts or the extension arms, or both.

1 29. The device of claim 26, wherein the elbow and the base are cast metal, the two tubes, the
2 elbow, and the base having mating ends to be fixedly and non-telescopically secured to each
3 other.

1 30. The device of claim 26, wherein the elbow is asymmetric, making one of the legs into a
2 shorter leg, and the other of the legs into a longer leg, each of the legs terminating in respective
3 leg ends, each of the leg ends being able to removably fit in either the proximal end of the
4 extension arm or the end of the post, whereby the elbow is reversible, the free end of the
5 extension arm defining a first offset when the extension arm is secured to the shorter leg, and
6 defining a second offset, longer than the first offset, when the extension arm is secured to the
7 longer leg.

1 31. A davit assembly for use with a confined space entry device with a base and means for
2 hoisting loads, the davit assembly comprising:

3 a substantially vertical post member having a first end removably secured to and
4 slidably engaged in the base and extending outwardly therefrom and terminating in a
5 second end;

6 an extension arm having a proximal end removably secured to and
7 slidably engaged in one of the leg ends of the elbow, the extension arm extending
8 from the elbow and terminating in a free end, the other leg end of the elbow being
9 removably secured to and slidably engaged in the second end of the post; and

10 an asymmetric elbow having a longer leg and a shorter leg, each of the
11 legs adapted to slidably engage and be removably secured to either one of the posts and
12 the extension arm, the elbow being reversible to locate the free end of the extension arm
13 in first and second respective offset distances from the post; and

14 a nose assembly removably secured to and having a portion slidably
15 engaged in the free end of the extension arm;

16 wherein the post and the extension arm are formed substantially from
17 non-metal, fiber polymer matrix composite material.